

# **The Experimental Program to Stimulate Competitive Technology (EPSCoT)**

**Evaluation of Funded  
Projects 1998 - 1999**



**Summary of the  
2001 EPSCoT Evaluation Report**  
Contract No. 50SBTK0C1054

**Prepared for  
The U.S. Department of Commerce  
Office of Technology Policy  
January 2002**

---

# **The Experimental Program to Stimulate Competitive Technology (EPSCoT)**

## **Evaluation of Funded Projects**

Summary of the 2001 EPSCoT Evaluation Report  
Prepared for the U.S. Department of Commerce,  
Office of Technology Policy  
(Contract No. 50SBTKOC1054)



## **FOREWORD**

Technology innovation and commercialization are the new drivers of economic growth, both in the U.S. and around the world. Our ability to create new technologies and harness their power will directly impact our national prosperity, security and global influence. Technology development is also essential to improving the quality of life, economic vitality and standard of living of communities throughout our nation.<sup>1</sup>

To participate more fully in the Innovation Age, many regions, states and localities are developing strategies that leverage their existing strengths and create partnerships to attract innovative firms that will be engines of technology-led economic growth. Policy and planning decisions made at the state and local level play a critical role in establishing the environment for innovation, job growth, and enhanced productivity and competitiveness.

In 1997, Congress established the Experimental Program to Stimulate Competitive Technology (EPSCoT) to support the development, deployment, and diffusion of technology and to “...strengthen the technological competitiveness of those states that have historically received less Federal research and development funds than those received by a majority of states.”<sup>2</sup> Congress appropriated funds for EPSCoT grants in 1998 and 1999, and OTP awarded 18 grants in those two years.

In 2000 OTP contracted for an independent evaluation of the program to identify the lessons learned from those grants. The question was and remains: How might governments and communities best support technology-led economic development?

This report summarizes the results of that evaluation. An almost 200-page appendix provides greater detail about each of the 10 specific cases that were examined. While the outcomes of the grants varied among projects, the EPSCoT program demonstrated that a variety of approaches to promoting technology and economic growth strategies can stimulate greater cooperation between the research community and public and private sectors. Over the past three years, hundreds of other efforts to catalyze tech-led economic growth have appeared in communities across the nation, similar to the types of projects funded by EPSCoT. The report also revealed that relatively small amounts of grant monies were unlikely to impact the disparate distribution of R&D expenditures across the states or the prevailing economic conditions by which states qualified for the program.

As a result of the lessons learned from this experimental program, OTP has refocused many of its activities. Working closely with economic development specialists at the state and federal levels, as well as the technology community, OTP hopes its policy development and outreach efforts will catalyze tech-led economic development around the United States.

We welcome those who wish to work with us towards this critical goal.

Bruce P. Mehlman,

Assistant Secretary for Technology Policy

---

<sup>1</sup> See [http://www.ta.doc.gov/Speeches/BPM\\_020404\\_EconDev.htm](http://www.ta.doc.gov/Speeches/BPM_020404_EconDev.htm)

<sup>2</sup> See 15 U.S.C. 3704(f) (1)





# **Table of Contents**

	<u><b>Page</b></u>
<b>Foreward .....</b>	<b>i</b>
<b>Preface .....</b>	<b>v</b>
<b>Executive Summary .....</b>	<b>vii</b>
<b>Chapter 1 - Background .....</b>	<b>1</b>
EPSCoT's Mission .....	1
Recipient Eligibility and Funding .....	1
Methodological Framework of Evaluation .....	6
<b>Chapter 2- Findings .....</b>	<b>9</b>
Overview .....	9
Results of Evaluated Projects .....	14
Results of Interview Questions .....	20
<b>Chapter 3- Recommendations .....</b>	<b>31</b>
1-1 Summary of EPSCoT Awards, 1998 and 1999 .....	2
1-2 Federal Funding Obligation for Research and Development to EPSCoT States: From 1990 to 1996 .....	3
1-3 Summary of Federal Research and Development Investment and Technology Sector .....	4
1-4 Project Type and Funding .....	5
1-5 Hypothesized EPSCoT Technology Infrastructure Model .....	7
2-1 Summary by Type of Project .....	11
2-2 EPSCoT Grant Recipients and Site Visit States t .....	13
2-3 Types of Partnerships .....	25
2-4 EPSCoT Grantees' Relationship with the State .....	28
 <b><u>Appendices</u></b>	
<b>A. Enabling Legislation .....</b>	<b>A-3</b>
<b>B. Case Reports of 10 EPSCoT-Funded Projects .....</b>	<b>B-1</b>



## **Preface**

In FY 2001 the Office of Technology Policy (OTP) sponsored a twelve month comprehensive evaluation of the Experimental Program to Stimulate Competitive Technologies (EPSCoT). The objective of the evaluation was to provide OTP with an objective review of the effect of the funded projects and an assessment of the program's underlying concept, design, and structure.

The following report corresponds to the part of the study that examines the role of EPSCoT funding and the potential effect of the funding on 10 different funded projects. Complete case study reports for each of the ten projects have also been compiled and are available in Appendix B. The projects that were visited and studied were:

- 1.     *Development of an Entertainment Technologies Industry in Southern Nevada***
- 2.     *Maine Center for Enterprise Development and Commercialization Support***
- 3.     *Maine EPSCoT Technology Commercialization Network***
- 4.     *RF Wireless Testing and Training Cluster in Eastern Nebraska***
- 5.     *Accelerating Commercialization of University-based Technologies in Louisiana***
- 6.     *North Dakota EPSCoT; Enhancing Technology in North Dakota***
- 7.     *Team Delta, Technology-based Economic Development Alliance in the Mississippi Delta-- Arkansas, Mississippi, Louisiana***
- 8.     *Oklahoma; Cameron University EPSCoT Planning Project***
- 9.     *Oregon Emerging Business Initiative***
- 10.    *South Carolina Experimental Program to Stimulate Competitive Technology***



## Executive Summary

The Experimental Program to Stimulate Competitive Technology (EPSCoT) is a matching grants program that supports regional and local policy experiments to develop, and diffuse technology in eligible jurisdictions by promoting partnerships among state and local governments, universities, community colleges, nonprofit organizations, and the private sector. The program was established in the Technology Administration Act of 1998, codified at 15 U.S.C. 3704(f) (see appendix A).

The program's mission is to foster the conditions necessary for the development and adoption of innovative technology by industry (principally small businesses) and manufacturers. Through locally-identified- and-constructed partnerships, EPSCoT supports state and local efforts to:

- Build statewide institutional capacity to support technology commercialization; and
- Create a business climate conducive to technology development, deployment, and diffusion.

One goal of EPSCoT is to improve the technological competitiveness of states that have historically received less federal research and development (R&D) funding than a majority of the states.<sup>3</sup>

Proposals for projects have come from state, local, or tribal governments, community colleges, universities, non-profit organizations, private (for-profit) organizations, technology business centers, business incubators, and/or industry councils within eligible states. The expectation has been that these projects would create new knowledge, develop successful institutional relationships, demonstrate new concepts that can be replicated, or develop concepts that can be sustained by other organizations at the end of the grant period.

Strategies for accomplishing these activities have involved building upon state and local expertise, state and local resources, community colleges, vocational schools, research universities, the business community, the financial community, and any federal resources the jurisdiction may have had access to such as national laboratories, manufacturing extension centers, or technology transfer centers.

The states with funded EPSCoT projects faced many challenges including budget cuts, recessions, out-migration of population, disparity in research and technology expertise and facilities, and lack of interest in technology-based economic development due to the dominance of other state industries. The projects further confronted negative community perceptions about the role of technology in their state's overall economic future. This has been primarily due to a resistance to change, lack of education, or information about technology-based economic development, and the potential costs to local community or state residents in the form of tax increases to support a growth in technology-related infrastructure.

Projects received support in the form of funding from the EPSCoT grant, matching funds, and

---

<sup>3</sup>EPSCoT-eligible states ranked 26<sup>th</sup> or lower in the distribution of federal R&D funds during the 1990-1996 period.

in-kind funds. EPSCoT funding ranged from \$70,000 to \$300,000. Matching and in-kind funds were drawn from a variety of sources: the State, local economic development agencies, corporations, and private donors. Matching funds ranged from \$140,00 to \$532,000.

**Evaluation Methodology** - This evaluation consisted of three tasks that examined the different aspects of EPSCoT and related policy issues: 1) site visits to determine the role of EPSCoT funding and the potential effect of the funding on a variety of technology infrastructure issues; 2) a conceptual analysis of how eligibility and graduation criteria are defined for states participating in the EPSCoT program; and 3) a conceptual analysis of the appropriate federal role in facilitating deployment and diffusion in underserved areas. Together all three tasks help to provide the basis for evaluating the mission of EPSCoT

The site visits were conducted in 10 EPSCoT-eligible states with funded projects and five EPSCoT-eligible states that did not receive funding. Case reports were developed based on interviews and observations made during the site visits. The case reports examine project inputs, activities, short-, intermediate-, and long-term results associated with EPSCoT funding, as well as several policy issues that directly relate to evaluating the mission of EPSCoT. A summary of all of the 10 EPSCoT-funded projects appears in Exhibit 2.2.

**Results** - Results of the projects varied significantly due to the nature and time frames of the types of projects undertaken (see chapter 2 for more detail). In the short-term, many of the projects identified target areas of opportunity and conducted marketplace research or collected data about a particular niche within the state. Some projects also accomplished intermediate results including increasing funds for technology development by winning Small Business Innovation Research Program (SBIR) and Small Business Technology Transfer Program (STTR) grants. Others created specialized economic development tools and focused on strengthening their community or state's infrastructure.

At the time of the site visits, few of the projects had yet achieved significant **long-term** results. For those that did, the results included attracting three high-tech firms to a community and creating more than 70 new high-tech jobs. In addition, one technology park is under construction which will eventually lead to the location of new high-tech firms to the community and an increased number of high-tech jobs. One important lesson learned is that significant outcomes may not be realized in the short-term (two to three years). In addition, relatively small amounts of grant monies appear unlikely to change the general economic conditions of the state and region or prompt significant redirection of state and local governments' expenditures. Consequently, it is difficult to use general economic performance measures as indicative of impacts and outcomes.

**Recommendations** - The evaluation identified four areas in which greater communication might improve program performance:

- **Partnerships:** OTP should provide information on partnering options in addition to guidance on communicating and coordinating effectively with partners. Projects that partnered with state entities found that partnerships with the State provided increased credibility and visibility of the activities. The State was able to “make things happen.” Partnerships with universities and industry successfully led to facilitation of technology-based economic development.
- **EPSCoT Funding:** OTP staff must reinforce the idea at the beginning of the grant period that additional funding may not be forthcoming from their agency. The ending of EPSCoT’s funding proved disruptive to some of the projects that failed to secure funding beyond the EPSCoT grant period. Many of the grantees believed funding would be awarded and available on an annual basis.
- **On-going Guidance:** OTP staff should increase the direction and guidance provided throughout the life cycle of the grant, as many grantees overestimated what could be completed with respect to the given time and funding allocations. In addition, consistent and continuous feedback should be given on projects’ quarterly report submissions so if problems arise, they can be resolved quickly.
- **Outcome Evaluation:** EPSCoT funding is intended to be for one, short-term project. Due to the types of projects funded, long-term outcomes are difficult to assess. For example, evaluation of the impact of commercialization projects is premature as projects are at an early juncture in the multi-year, multi-phase commercialization process. In the evaluation of proposals, OTP should consider focusing on immediate results rather than future long-term impacts.





## **CHAPTER 1 - BACKGROUND**

### **EPSCoT's Mission**

Mandated by the Technology Administration Act of 1998 (codified at 15 U.S.C. 3704(f)) the Experimental Program to Stimulate Competitive Technology (EPSCoT) is a matching grants program that supports regional and local policy experiments to develop and diffuse technology in eligible jurisdictions by promoting partnerships among state and local governments, universities, community colleges, non-profit organizations, and the private sector. Through these partnerships, EPSCoT seeks to support state and local efforts to:

- Build statewide institutional capacity to support technology commercialization; and
- Create a business climate that is conducive to technology development, deployment, and diffusion.

### **Recipient Eligibility and Funding**

Two grant competitions were conducted in 1998 and 1999 from a select category of states. Eighteen grants and approximately \$3.6 million were awarded; 7 awards and \$1.6 million in 1998 and 11 awards and \$ 2.0 million in 1999 (Exhibit 1-1). Currently, technological competitiveness and associated technology-based economic growth are unevenly distributed across states. For example, Massachusetts and Michigan have over 10 percent of their employment in technology-intensive industries,<sup>4</sup> while Hawaii, Montana, and North Dakota have about three percent. EPSCoT aims to improve the technological competitiveness of states that have historically received less federal research and development (R&D) funding a majority of the states; projects that received funding from EPSCoT in 1998 and 1999 ranked in the bottom 50 percent of states that received federal R&D monies during 1990-96 (Exhibit 1-2).

Even in EPSCoT-eligible states, well-developed science and technology infrastructures are distributed unevenly and great disparity exists in expertise and facilities. In addition, even though wages are typically far higher in states' technology sector (sometimes 65 percent more than the average private sector wage), the technology sector generally employs a relatively low percentage of the state's population (Exhibit 1-3).

During the 1998-2000 time period, States with funded EPSCoT projects faced other challenges including budget cuts, recessions, out-migration of the population, and relative lack of interest in technology due to other dominant state industries (e.g., entertainment, petroleum, agriculture, and forestry). The projects also confronted negative community perceptions about the role of technology in the state's economic future. These perceptions were due to resistance to change, lack of education or information about technology-based economic development, and the potential costs to state residents in the form of tax increases to support growth in technology infrastructure.

---

<sup>4</sup>As identified by 28 3-digit SIC codes that the Bureau of Labor Statistics uses to identify technology intensive industries.

## Exhibit 1-1

### SUMMARY OF EPSCoT AWARDS, 1998 and 1999

Eligible State or Territory	Fiscal Year of Award	Amount of Award \$000	Amount of Match \$000	Total Project Budget	Brief Categorization of Project
Alabama	1998	300	n.a.	n.a.	Comprehensive planning services plus three pilot projects
Arkansas	1999*	(see Mississippi, 1999)			
Idaho	1998	73	n.a.	n.a.	Coordination of services to small businesses
Louisiana	1998*	250	n.a.	n.a.	Facilitation of technology commercialization
	1999*	(see Mississippi, 1999)			
Maine	1998*	300	n.a.	n.a.	Assistance to small businesses in remote areas
	1999*	200	243	443	Assistance to small businesses
Mississippi	1998	300	n.a.	n.a.	Increase in small business competitiveness (e.g., SBIR)
	1999*	290	140	430	Three-state collaboration for tech-based businesses
Montana	1998	(see South Dakota, 1998)			
Nebraska	1999*	162	188	350	Planning for a specific emerging industry
Nevada	1999*	279	413	692	Comprehensive planning services and regional, substate coordinator
	1999	100	501	601	Technology outreach networking
North Dakota	1998	(see South Dakota, 1998)			
	1999	160	191	351	Commercialization assistance to technology companies
Oklahoma	1999*	70	324	394	Comprehensive planning services for high-tech industrial development
Oregon	1999*	250	350	600	Assistance for company formation (small businesses)
South Carolina	1999	250	532	782	Incubator network for company formation (small businesses)
South Dakota	1998	80	n.a.	n.a.	Four-state collaboration for tech-based businesses
Vermont	1999	86	87	173	Improved support to small businesses
West Virginia	1999*	150	150	300	Assistance for company formation (small businesses)
Wyoming	1998	(see South Dakota, 1998)			
Puerto Rico	1998	300	n.a.	n.a.	Increase in small business competitiveness
TOTAL FUNDING	1998	1603	n.a.	n.a.	(7 Awards)
	1999	1997	3119	5116	(11 Awards)

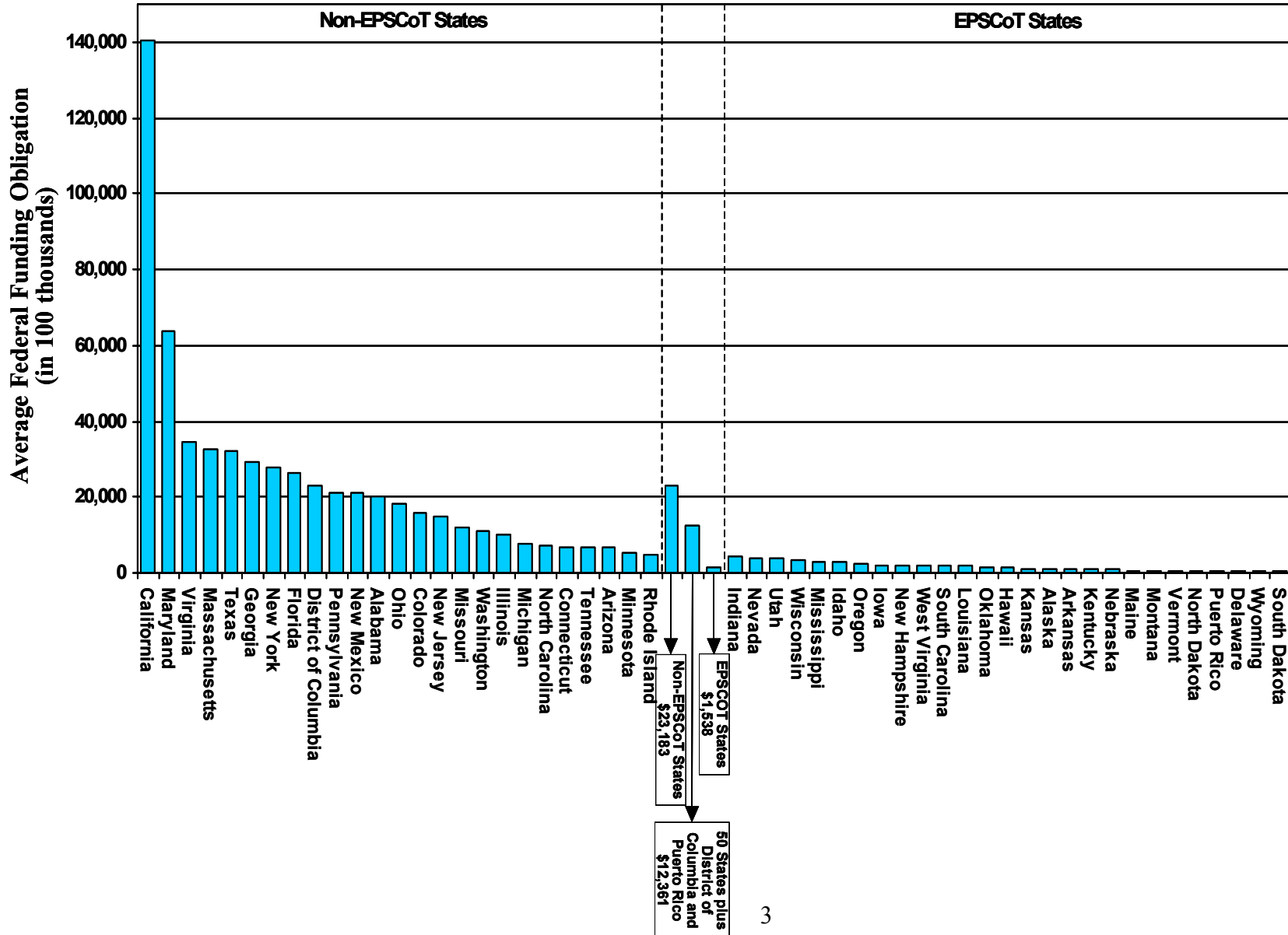
\*Site visit performed.

(Note: EPSCoT-eligible States receiving no awards: AK, DE, HI, IN, IA, KS, KY, NH, UT, a

Proposals for projects came from state, local, or tribal governments, community colleges, universities, non-profit organizations, private (for-profit) organizations, technology business centers, business incubators, and/or industry councils within eligible states.

Exhibit 1-2

FEDERAL FUNDING OBLIGATION FOR RESEARCH AND DEVELOPMENT TO EPSCoT STATES:  
FROM 1990 to 1996



### Exhibit 1-3

#### SUMMARY OF FEDERAL RESEARCH AND DEVELOPMENT INVESTMENT AND TECHNOLOGY SECTOR

State (project housed in)	Federal R&D (\$ in millions)	Source of Federal R&D Funds	Number Employed in High-tech Industry	Technology Wages: Percent Above the Average Private-Sector Wage
Arkansas, Louisiana, and Mississippi	202	DoD, NSF HHS, USDA, DoI	18,301	60 percent
Louisiana	235	DoD, USDA, NASA, HHS	22,119	60 percent
Maine	58	DoD, HHS	10,511	65 percent
Mississippi	251	DoD, NASA, USDA	14,182	N.A.
Nebraska	89	DoD, USDA, HHS, NSF	29,864	62 percent
Nevada	253	DoE, DoD	13,372	47 percent
North Dakota	45	USDA, DoI	5,298	43 percent
Oklahoma	138	USDA, DoD DoE, HHS, DoT NASA, NSF	33,797	60 percent
Oregon	320	HHS, USDA, DoD, NSF, DoE, EPA, DoC, DoI	N.A.	N.A.
South Carolina	205	DoD, HHS, NSF, DoE, USDA, DoC	28,632	60 percent

In keeping with EPSCoT's mission of fostering the conditions for the development and adoption of innovative technology by industry (principally small businesses) and manufacturers so as to foster technology-based economic growth, the program sought to fund the most innovative types of projects. The expectation was that these projects would create new knowledge; develop successful institutional relationships between organizations devoted to research, development and technology innovation; demonstrate new concepts that can be replicated; or develop concepts that can be sustained by other organizations at the end of the grant period.

Projects received support in the form of funding from the EPSCoT grant, matching funds, and in-kind funds from a variety of sources: the State, universities, local economic development agencies, corporations, and private donors. Matching funds ranged from \$140,000 to \$532,000. EPSCoT funding ranged from \$70,000 to \$300,000 (Exhibit 1-4).

**Exhibit 1-4****PROJECT TYPE AND FUNDING**

<b>Type</b>	<b>Program Name</b>	<b><u>Award Amount</u> (thousand)</b>	<b><u>Matching Funds</u> (thousand)</b>
<b>Providing Comprehensive Planning Services</b>	<b>Cameron University EPSCoT Planning Grant Request</b>	70	324
	<b>Development of an Entertainment Technologies Industry in Southern Nevada</b>	279	413
<b>Assisting Small Businesses</b>	<b>Center for Enterprise Development and Commercialization Support</b>	200	243
	<b>Maine EPSCoT Technology Commercialization Network</b>	300	300
	<b>Oregon Emerging Business Initiative</b>	250	350
	<b>1999 South Carolina Experimental Program to Stimulate Competitive Technology</b>	250	532
<b>Providing Services to Technology Firms</b>	<b>Accelerating Commercialization of University-based Technologies in Louisiana</b>	250	525
	<b>North Dakota EPSCoT: Enhancing Technology in North Dakota</b>	160	191
	<b>RF Wireless Testing and Training Cluster in Eastern Nebraska</b>	162	188
<b>Participating in a Multi-State Collaboration</b>	<b>TEAM Delta: Technology-based Economic Development Alliance in the Mississippi River Delta</b>	290	140

## **Methodological Framework of Evaluation**

The evaluation framework for this evaluation was based on the implicit design of the EPSCOT program: funding should lead to one of several activities, in turn increasing a State's competitiveness, and finally, producing the desired long-term increases in technology-related infrastructure.

The specific features of the evaluation model (shown in Exhibit 1-5) were derived from EPSCOT's program, guidelines, and experiences to date. For example, four types of funded activities reflect the major types of projects proposed by the grant recipients:

- Providing comprehensive planning services (2 projects)
- Assisting small businesses (4 projects)
- Providing services to technology firms (3 projects)
- Participating in a multi state collaboration (1 project)

Of special interest are two features in the evaluation model: the promotion of cluster development as a program strategy, and the possibility that a State might seek to accomplish a niche rather than comprehensive competitiveness as a strategic choice.

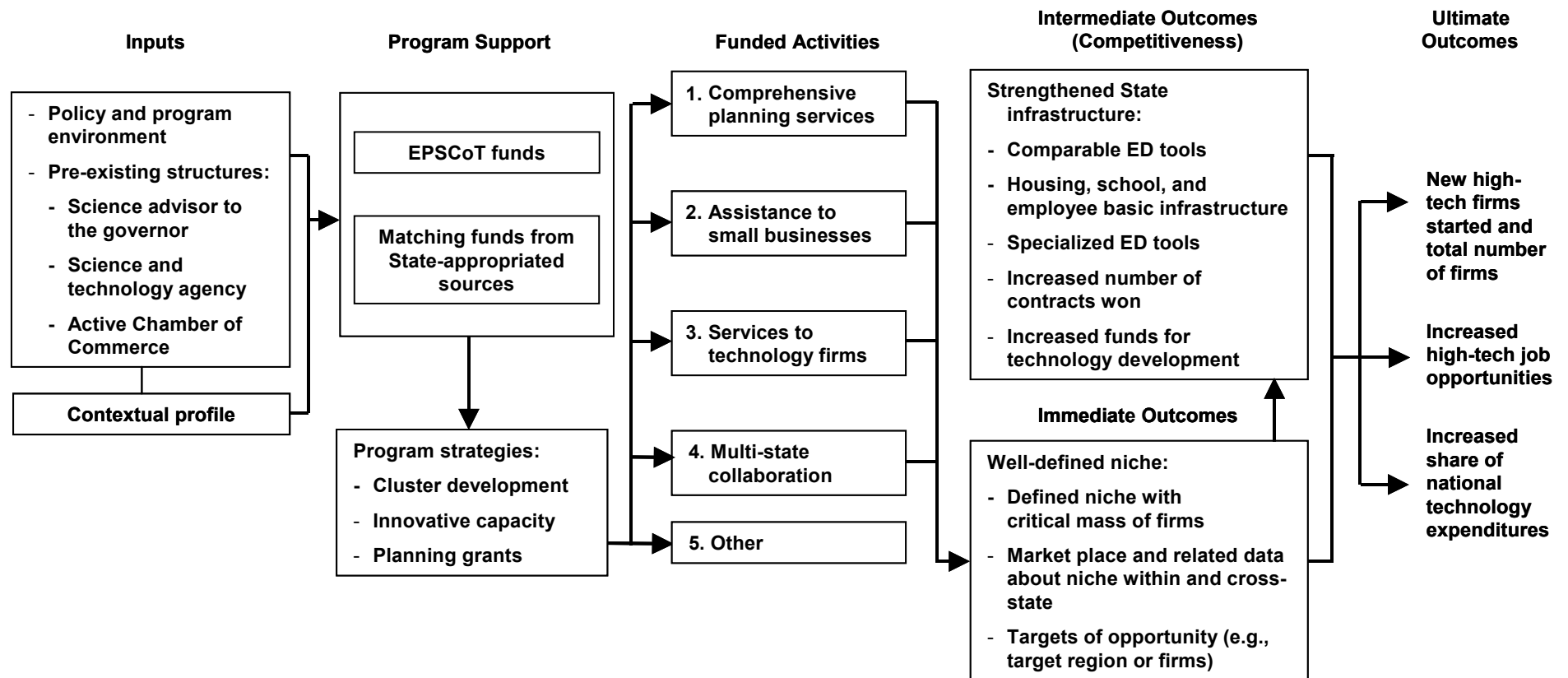
The model also assumes that investments made in strengthening the technological infrastructure of a State should result in greater R&D investments from the public and private sectors. These investments may enhance and increase human capital development and retention, knowledge creation, technology transfer, commercialization, intellectual property development, and/or attracting new companies to the State. Interviews conducted during the site visits augmented the evaluation. Several issues were explored:

- Economic development activities conducted by the grantees,
- Role of the Office of Technology Policy
- Partnerships
- Projects' relationship with the state
- Unanticipated outcomes, problems and concerns, and lessons learned.

Findings in each of these aspects, as derived from the site visits, are detailed in chapter 3 of this report. Other evaluation tasks, such as the conceptual analyses that focused on how eligibility and graduation criteria are defined and the appropriate federal role in facilitating deployment and diffusion in underserved areas are in a separate volume and may be viewed upon request.

Exhibit 1-5

# **HYPOTHESIZED EPSCoT TECHNOLOGY INFRASTRUCTURE MODEL**







## CHAPTER 2 -FINDINGS

### **Overview**

Evaluators conducted 10 site visits to EPSCoT projects. Selection criteria included considerations regarding type of project, geographic dispersion, and relative success of the project. Detailed case reports appear in appendix B.

All evaluated projects attained their immediate anticipated goals, such as identifying target areas of opportunity, conducting marketplace research, or collecting data about a particular niche within the State. Many of the projects also achieved intermediate outcomes including creating specialized economic development tools and focusing on strengthening community or State infrastructure.

About one-third of the projects studied achieved significant long term outcomes. For those that did, results included attracting three high-tech firms to a community and creating more than 70 new high-tech jobs. In addition, one technology park was reported under construction, which will lead to the location of new high-tech firms to the community and an increased number of high tech jobs (see Exhibit 2.1 for a summary of projects' outcomes over time).

One important lesson learned from this evaluation is that significant short term outcomes (two to three years) may not be realized in commercialization types of projects that are funded by discrete, short term, small grants. These types of projects typically have a life span that exceeds the grant period, with complete implementation and commercialization taking from five to 20 years, depending on the technology. In addition, the amounts of EPSCoT grant monies were relatively small and unlikely to affect the general economic conditions of the region or leverage major shifts in the expenditure priorities of State and local governments. Consequently, it is difficult to use general economic performance as a measure of impact and outcome.

In addition to an evaluation of immediate, intermediate, and long term outcomes, interviews with grantees revealed that some believed that they had overestimated the activities that could be accomplished under the given financial allocations and time constraints. Some grantees decided not to pursue activities that were originally planned after concluding that another activity would be more appropriate, given the current circumstances or experiences to date, or that the activity was unnecessary for the successful completion of the project.

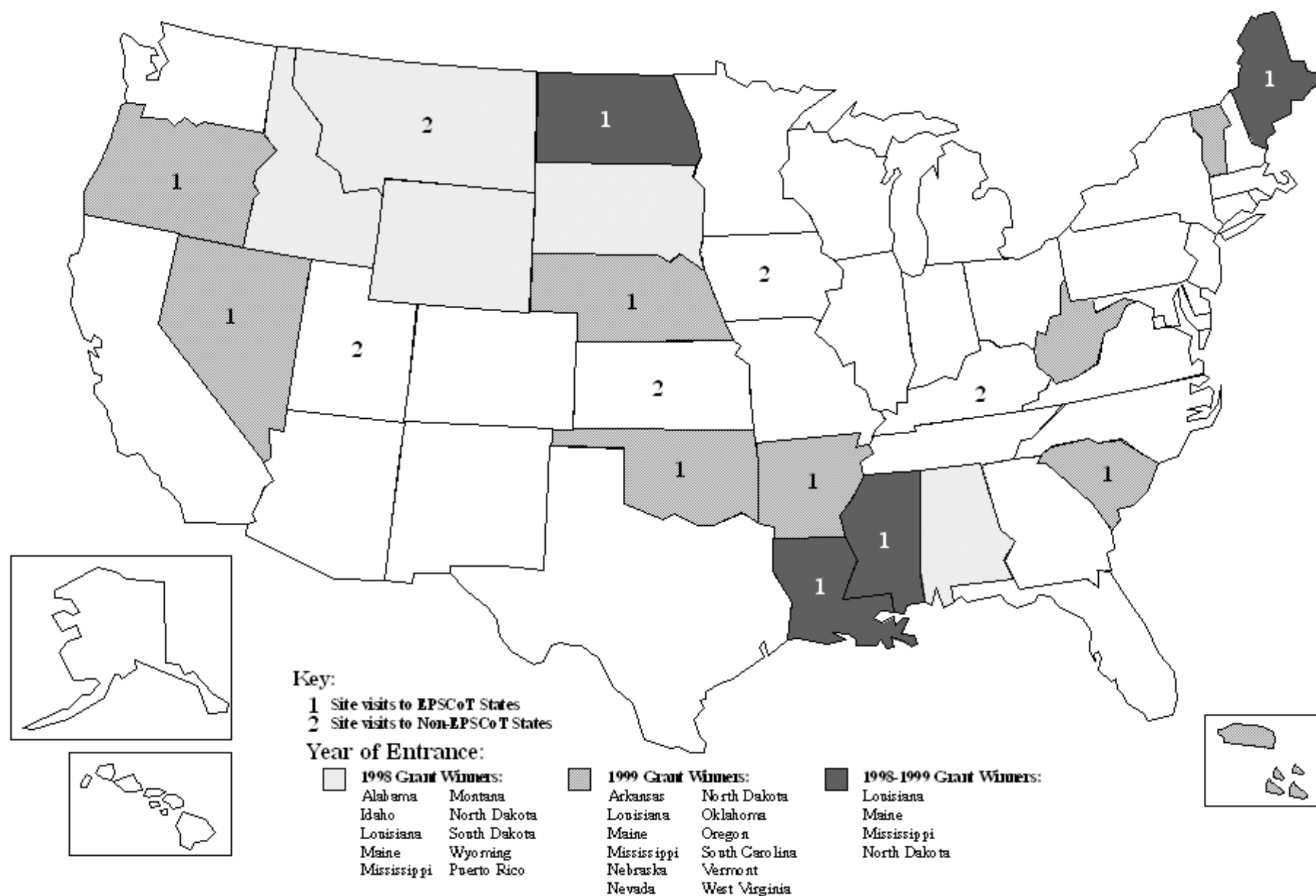


## Exhibit 2-1

Type of Project	Inputs	Activities	Short-Term Results	Long-Term Results <sup>1</sup>
<b>Provided Comprehensive Planning Services</b> (n=2)	<b>EPSCoT Awards: \$70,000 to \$280,000</b>  <b>Matching Funds: \$325,000 to \$413,000</b>  <b>Average federal R&amp;D obligation (\$ in millions) 140 to 404</b>	<b>Conducted extensive regional needs assessment (contributors included universities, businesses, industry, and local government)</b>  <b>Wrote economic development plan that now serves as a model for other cities</b>	<b>Generated a ballot initiative in 2000 to approve a tax base for economic development</b>  <b>Changed perception within State about the role of technology in economic development</b>  <b>Increased networking with universities, 11 cities, and industry leaders</b>	<b>1 new high-tech firm recruited</b>
<b>Provided Services to Technology Firms</b> (n=4)	<b>EPSCoT Awards: \$160,000 to \$250,000</b>  <b>Matching Funds: \$188,000 to \$525,000</b>  <b>Average federal R&amp;D obligation (\$ in millions) 49 to 175</b>	<b>Created a testing facility for technology firms (purchased equipment, developed courses, and established test sets)</b>  <b>Provided commercialization expertise to about 100 companies</b>  <b>Convened industry forums on high-tech issues serving 100s of individuals (SBIR workshops, small business issues, troubleshooting, etc.)</b>	<b>Awarded \$140,000 in SBIR grants</b>  <b>Leveraged additional \$32,000 in funding for a start-up company and \$10,000 for seed funding for another</b>  <b>University tech transfer office started</b>  <b>Leveraged additional funding to create a Phase 3 SBIR program</b>  <b>Assisted with reorganization of State's economic development office</b>  <b>Increased networking with universities, entrepreneurs, and businesses (in and out of State)</b>	<b>71 new high-tech job opportunities resulted</b>  <b>2 new high-tech firms started</b>  <b>technology; and 4. Participating in a multi-state collaboration</b>

Type of Project	Inputs	Activities	Short-Term Results	Long-Term Results <sup>1</sup>
<sup>1</sup> In theory, all grants should contribute to some if not all of the following: increased number of new high-tech firms starting/relocating; increased high-tech job opportunities; and increased share of national technology expenditures.				
Assisted Small Businesses (n=3)	EPSCoT Awards: \$200,000 to \$300,000	Provided commercialization expertise to over 100 companies		High-tech firm awarded \$400,000 from NSF through the SBIR program
	Matching Funds: \$243,000 to \$532,000	Assisted with product distribution in foreign markets	Received \$759,000 grant to develop business incubator	
	Average federal R&D obligation (\$ in millions) 59 to 244	Generated databases, Web sites and clearinghouses serving 100s of individuals	Received \$100,000 to host conference	
		Created industry-specific internship programs	Won grant to team with city in a technology business attraction program	
			Increased university and industry collaboration which led to the development of 20 proposals (potentially generating \$12 million)	
			Developed alliance with MEP (helped 3 companies enter into noncontractual cooperative R&D agreements with NIST)	
			Created angel funding networks in rural communities	
Participated in a Multi-state Collaboration (n=1)	EPSCoT Awards: \$290,000	Conducted needs assessment in 9 communities	Formed 8 alliances with regional companies and developed relationship with 2 companies to enhance the workforce through education programs	
	Matching Funds: \$140,000	Convened industry forums serving more than 550 individuals	Created 10 web-based modules/economic development tools for 9 communities	
	Average federal R&D obligation (\$ in millions) 182			

<sup>1</sup>In theory, all grants should contribute to some if not all of the following: increased number of new high-tech firms starting/relocating; increased high-tech job opportunities; and increased share of national technology expenditures.



\*States currently eligible for EPSCoT grants: Alabama, Alaska, Arkansas, Delaware, Hawaii, Idaho, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Mississippi, Montana, Nebraska, Nevada, New Hampshire, North Dakota, Oklahoma, Oregon, South Carolina, South Dakota, Utah, Vermont, West Virginia, Wisconsin, Wyoming, and Puerto Rico.

## **Results of Evaluated Projects**

Ten site visits were conducted to funded EPSCOT projects. (Exhibit 2-2). Selection criteria for the sites included: type of project; geographic dispersion; and relative activity of the project. The final sample included at least one State representing each type of project (see Appendix B).

### **Results of Two Projects Providing Comprehensive Planning Services**

Economic development activities for this group included conducting needs assessment analysis, convening industry roundtables, identifying barriers to technology growth, analyzing the existing workforce, developing and implementing training programs, and writing a comprehensive economic development plan and implementation strategy. Longer term results included:

#### **Nevada**

##### ***Development of an Entertainment Technologies Industry in Southern Nevada Henderson, NV***

- With private sector matching support, expanded college-level training and facilities at the University of Nevada/Las Vegas (using AVID Post production workstations) in order to develop local expertise in entertainment-related technologies;
- Produced a short training and demonstration film; and
- Increased networking opportunities with local businesses.

#### **Oklahoma**

##### ***Cameron University EPSCOT Planning Grant Request Lawton-Fort Sill, OK***

- Recruited one new high-tech firm to the area;
- Held a ballot initiative in 2000 to approve increases on local expenditures for technology-based economic development;
- Created an economic plan that now serves as a model and can be easily replicated in similar regions;
- Changed community perceptions about the role of technology in economic development. Evaluation found that the community has become energized since the publication of their economic development plan and sees it as a serious effort that has received wide-ranging support; and
- Increased networking opportunities with other universities, 11 cities, and industry leaders.

## **Results of Four Projects Assisting Small Businesses**

Economic activities for this group included the creation of economic development, technology, or marketing plans; convening industry forums/meetings; developing training programs, modules, or courses; providing commercialization expertise; creating internship programs; assisting with foreign market product distribution; and generating databases, Web sites, or clearinghouses for information related to technology-based economic development.

### **Maine**

#### ***Maine EPSCOT Technology Commercialization Network - Bangor, Maine (1998 grant)***

The project assisted the State of Maine to serve small businesses in remote parts of the State through a virtual service component that was backed up by an individual who provided one-on-one assistance. Longer term outcomes included:

- Received a \$759,000 grant from State of Maine to develop a business incubator;
- Developed an unanticipated strong relationship with the Maine Manufacturing Extension Program (MEP). MEP proved to be a key player in developing critical relationships with businesses. As a result of MEP involvement, three companies entered into cooperative R&D agreements with the National Institute of Standards and Technology;
- Identified the opportunity and provided commercialization assistance to seven local companies; and
- Increased networking opportunities among technology firms and groups.

#### ***Center for Enterprise Development and Commercialization Support - Portland, Maine (1999 grant)***

In general, the project improved small businesses' access to university resources, provided on-site training, and improved small firms' access to capital. Longer term outcomes included:

- A local technology company and client of the Center won \$400,000 from the NSF through the SBIR program;
- Won Sate award to team with the city of Portland, ME in a technology business attraction program;
- Received a pledge of support from EPA for activities related to the development of new technologies;
- Developed more technology courses in an effort to create a more educated workforce;
- Received support from the State as demonstrated by the creation of the Maine Technology Institute (MTI) during the grant period;
- Identified the opportunity and provided commercialization assistance to seven local companies; and



- Increased networking opportunities with local governments and businesses.

### **Oregon-**

#### ***Oregon Emerging Business Initiative - Portland, Oregon (1999 grant)***

The project sought to re-orient the State's economic development strategy and reduce barriers between higher education and emerging technology businesses. The State has shifted efforts away from a strategy of industrial recruitment and is focusing on establishing technology-based companies.

- Received \$100,000 in sponsorships from the private and public sectors to host the National Association of Seed and Venture Funds (NASVF) Conference and to combine event with Venture Oregon activities;
- Increased university and industry lab collaboration which led to the State "Spires of Excellence" Bioscience initiative, generating 20 university-related proposals for \$12 million in state funds to implement;
- Initiated collaborations with Washington State's Washington Technology Council, a model of university-industry-federal lab collaboration that has successfully used small State investments to leverage federal and private research funds for technology development and deployment. It is anticipated that a more formal partnership will develop in an effort to replicate Washington's efforts in Oregon;
- Gained the attention of the legislature, changing its awareness and perceptions about the role of education. The legislature has traditionally viewed universities as nothing beyond education centers. For example, two legislative sessions prior, higher education representatives were not allowed to describe their efforts as "research;"
- Teamed with NASVF on "Seed Investing as a Team Sport" training to create angel networks in rural communities; and
- Identified targets of opportunity with local companies.

### **South Carolina-**

#### ***South Carolina Experimental Program to Stimulate Competitive Technology Columbia, South Carolina (1999 grant)***

The project established a university-based incubator network that supported incubator program development at Clemson University and the University of South Carolina. The physical facilities were linked to economic development entities, venture capitalists, entrepreneurs, and one another through a Virtual Entrepreneurial Development Center. Sustained outcomes included:

- Received donation of building to serve as incubator facility at Clemson University;
- Increased demand for collaborative technology transfer efforts with Clemson University;
- Increased demand for student incubator space at the University of South Carolina;

- Created entrepreneurial courses at the two universities;
- Increased networking opportunities with universities, local governments, and technology entrepreneurs.

### **The Results of Three Projects Providing Services to Technology Firms**

Activities for this group included the creation of testing facilities and tests sets for technology firms, convening industry forums on high tech issues; conducting workshops to facilitate more local participation in the SBIR and other federal research programs; facilitating access to promising university technologies, developing training programs, modules, or courses; and providing commercialization expertise.

#### **Louisiana-**

#### ***Accelerating Commercialization of University-based Technologies in Louisiana Baton Rouge, Louisiana (1998 grant winner)***

The grantee developed and implemented regional and statewide strategies to accelerate commercialization of university-based technologies.

- Formed a technology transfer office at Louisiana Tech;
- Played an important role in the reorganization of the Department of Economic Development. At the beginning of this project, they were unaware of the important role their EPSCOT work would play in the reorganization of the State Economic Development Department. The partnerships that formed during the grant period as well as the activities pursued during this period have served to lay a strong foundation;
- Created a second Web site to place all area universities' technologies at the same Internet address. Once the site is fully operational, businesses will be able to find information about all of Louisiana's participating universities at one convenient location;
- Awarded \$140,000 in SBIR grants to local companies to date;
- Leveraged additional funding to create a Phase 3 SBIR program. Prior to the EPSCOT grant, there was no funding available for Phase 1 applications but because of the success of the Phase 0 and Phase 1 SBIR funding thus far, the Louisiana Economic Development Council (LEDC) will create a Phase 3 to provide a financing source for Louisiana businesses in commercializing technologies developed through the SBIR/STTR programs;
- Through a "Technology Harvest" program, identified 25 emerging technologies that participating local universities will submit to a commercialization evaluation by firms specialized in those technologies;
- Increased networking opportunities with universities, businesses, and nonprofit organizations.

### **North Dakota-**

#### ***North Dakota EPSCOT: Enhancing Technology North Dakota - Grand Forks, ND (1999 grant)***

The grantee developed the framework and infrastructure necessary to enable more technology-based companies to compete successfully in federal R&D programs and support successful technology commercialization.

- Gained 71 new high-tech job opportunities in seven companies specializing in polymers, avionics, advanced materials, and software development.
- Started two new high-tech firms;
- Leveraged an additional \$32,000 in funding for a start-up company and \$10,000 for seed funding for another company;
- Helped three local companies to win SBIR awards to date;
- Developed an entrepreneurial program and entrepreneurial classes at the University of North Dakota that can be taken for credit, even by nonbusiness majors. There is now collaboration between two engineering schools and three business schools in the State;
- Helped local companies to make a connection with the Advanced Technology Program (ATP) would not have been possible had it not been for EPSCOT funds because they had never submitted an ATP proposal before; and
- Increased networking opportunities with universities, businesses, and technology entrepreneurs.

### **Nebraska-**

#### ***RF Wireless Testing and Training Cluster in Eastern Nebraska - Lincoln, Nebraska (1999 grant)***

The grantee developed a test facility, delivered short courses, and conducted workshops to foster ongoing training for participants at all levels, and created hands-on experimental training modules for engineers and technicians on the use of high-tech test equipment and computer-aided design software.

- Gained the support of the legislature; as evidenced by the legislatures authorization to spend \$5 million on the creation of the Nebraska Center for Electrical Excellence;
- Eliminated the stigma usually attached to the University of Nebraska-Lincoln working with Southeast Community College by creating a partnership to the provide the academic environment and training courses for the Nebraska Center for Electrical Excellence;
- Increased networking opportunities with local and out-of-state RF and wireless technology companies as part of the State's effort's to capitalize on the emerging expertise and encourage new job growth.

### **Results of the Project in Multi-state Collaboration**

Activities included conducting community technology assessments through nine communities over a 3-state area, holding workshops, convening industry forums, and developing learning tools.

#### ***TEAM DelTA: Technology-based Economic Development in the Mississippi River Delta - Jackson, Mississippi (1999 grant winner)***

The project is a community-oriented effort geared toward the Mississippi River Delta region within Arkansas, Louisiana, and Mississippi. The grantee held technology-based economic development workshops, conducted community technology assessments, developed asynchronous-learning modules, and held an accessing technology conference.

- Formed eight alliances with regional companies and developed relationship with two companies to enhance the workforce through education programs; and
- Identified economic development tools and targets of opportunity in nine communities.

Most of the projects described above, achieved either immediate, intermediate, or ultimate outcomes to some degree. However, due to the nature and time frames of the types of projects undertaken, these tended to vary significantly. With regard to achieving the immediate outcomes identified in the evaluation logic model, many of the projects identified target areas of opportunity and conducted marketplace research or collected data about a particular niche within the State. Some projects also accomplished intermediate outcomes including increasing funds for technology development by winning SBIR and STTR grants. Others created specialized economic development tools and focused on strengthening their community or State's infrastructure. Perhaps because of newness of most of the projects at the time of the site visits, few of the projects achieved many significant long term or ultimate outcomes shown in the logic model. For those that did reach ultimate outcomes, the positive results included attracting three high-tech firms to a community and creating more than 70 new high-tech jobs. In addition, one technology park is under construction which will lead to the recruitment of new high-tech firms to the community and an increased number of high-tech jobs.

## Results of Interview Questions

A protocol was developed and used by the contractor Cosmos in carrying out the field-focused study portion of the EPSCoT evaluation. This protocol served as a standardized agenda for collecting project process and outcome data and asked the same questions. Those questions included: the activities conducted by the grantee, the role of the Office of Technology Policy, partnerships, the project's relationship with the state, challenges and concerns; and lessons learned. The intended focus was to define actual events and behaviors, not just perceptions and attitudes. The protocols were designed to meet the overall objective by evaluating each of the ten projects and assessing EPSCoT's underlying concept, organization, and structure.

### **Role of the Office of Technology Policy (OTP)**

**Relationship with OTP Staff.**— Staff at OTP provided guidance during the initial application-writing phase, held an awardee conference for the successful grantees, gave feedback to the grantees regarding their activities as stated in quarterly reports, answered questions throughout the grant period, and administered the requested adjustments to deadlines, funding limits, and tasks when appropriate.

In general, the grantees found OTP staff to be helpful, unintrusive, and responsive to the inquiries and concerns. All of the grantees reported that they welcomed the flexible, adaptable approach to the project. One grantee reported that OTP staff provided guidance and suggestions on the original grant application, negotiating with them at certain points and advising them on where to better direct their attention. Other grantees, however, stated that they would have preferred more guidance at the beginning of the project. They expressed a desire for OTP staff to participate to a greater extent in initial discussions so that they could have worked together to develop achievable and realistic project goals.

Staff turnover within OTP was another key issue. Grantees stated that staff turnover within OTP proved to be disruptive to their efforts in that there was a lengthy lag time during the transition period and a subsequent “learning curve” to be overcome with regard to understanding the project.

**Original Proposal Requirements and Funding.**— The fact that some of the grantees were unable to fully complete their tasks by the end of their grant period suggests that more structure at the outset would have been constructive. Grantees acknowledged their expectations were unrealistic, and they were disappointed to discover that they would not be able to accomplish all of the activities that they had initially anticipated. Four of the projects acknowledged that they overestimated the amount they could accomplish given the time and money they were allotted:

- Oregon Emerging Business Initiative - They were unaware at the time that some of the tasks would overlap in areas and some would take on “a life of their own” resulting in additional time and expense;
- The Maine Center for Enterprise Development and Commercialization Support - Found that they had unrealistic expectations about what could be accomplished in the time frame they committed to and had to restructure their activities during the grant period.;
- Enhancing Technology North Dakota - Mentioned that they had underestimated the amount of time and money they would need to spend with each of company;

- **TEAM DelTA:** Technology-based Economic Development in the Mississippi River Delta - Expressed the desire to spend more time in the communities performing their assessments. They were “overzealous” in their initial plans and found that they may have been benefitted from setting more realistic goals for themselves.

The two main areas where expectations were unrealistic were: 1) funding levels and term and 2) activities. OTP staff could assist in defining these expectations prior to the commencement of project work.

In addition to funding the proposed activities, the grantees used EPSCoT funds for three other primary areas: 1) salaries and fringe benefits of key personnel and consultant; 2) travel to meetings, conferences, and other cities to conduct site visits and community assessments; and 3) facility and operating/administrative costs. All grantees reported that funding was essential to the successful completion of their project. Without the discretion to use funds for these three areas, the grantees stated that they would not have been able to go forward with their project.

**Grantee Meeting.**— All of the grantees described the initial meeting in Washington, DC as very informative, providing the necessary framework and guidelines for the EPSCoT project as a whole. Some grantees expressed an interest in OTP developing a means whereby the various projects could communicate with one another to problem-solve, exchange ideas, and network. This could be accomplished through additional meetings in Washington, DC or in other less costly means such as video teleconferencing, list serves, newsletters, or an interactive Web site containing a list of frequently asked questions.

This sort of communication might have been particularly beneficial for projects that operated in a state that also had another ongoing EPSCoT project. For example, there was minimal interaction within the two States, Maine and Louisiana, that each housed two of the funded regional EPSCoT projects. All four of these projects worked independently to affect their respective legislatures. Collaboration on this front may have led to greater interaction with the state legislature and, in turn, more favorable legislation and funding opportunities. This approach would have been more functional for the two Maine projects since they both provided assistance to small businesses as their primary activity.

**Administrative Requirements.**— Most grantees found that the required submission of quarterly reports and other administrative demands to be nonburdensome. The process of preparation and submission of the quarterly reports was beneficial, enabling them to stay abreast of their tasks, providing needed direction, and helping to establish benchmarks for their accomplishments. In addition to submitting the quarterly reports to OTP, some of the grantees used them as a vehicle for communicating and disseminating information to other partners and stakeholders in the project.

The grantees reported that more feedback from OTP staff regarding the quarterly report submissions and other administrative requirements would have helped them. One grantee noted that when directly solicited, useful feedback from OTP staff was received, but that additional advice and direction regarding the content of the quarterly report and problems with activities was not offered.

## **Partnerships**

The EPSCoT grant's structure both allowed and encouraged effective, far-reaching partnerships between universities and industry, between universities and colleges, across universities, with State science and technology or economic development offices, and across States. Several of the projects enjoyed several types of partnerships, providing a thorough understanding of the region's needs and how to best meet them.

While the types of partnerships varied greatly from project to project (Exhibit 2-3), all grantees reported benefitting from the partnerships that formed. Each of the partners brought a unique understanding of the problem and appeared to be committed to solving it. The primary benefits noted among the partners were:

- having representation of many diverse sectors;
- having the ability to develop and implement an action-oriented plan;
- working together noncompetitively toward a common goal;
- building on pre-existing relationships; and
- realizing the importance of maintaining these relationships beyond the grant period.

Three of the projects stated that the EPSCoT grant encouraged a noncompetitive atmosphere between partners. Key to this noncompetitive environment was a common purpose or interest in technology-based economic development for the State or region as a whole. By combining resources, the grantees worked jointly to develop broader, more strategic plans for carrying out the project goals. Each partner viewed itself as part of the larger picture rather than on an individualistic basis, seeking to achieve goals that would benefit and advance them only.

Universities and other institutions of higher education play a role in providing consulting expertise and development assistance to energize technologies and supporting universities makes university research programs more attractive. In contrast to other grant programs,<sup>5</sup> EPSCoT funds are often directed to nonuniversity entities, such as the Eastern Maine Development Corporation and the Henderson Nevada Chamber of Commerce, and support a broader range of activities, including commercialization of new ideas into viable technologies.

Specific activities of the funded EPSCoT projects included full-scale involvement by the university in the technology-based commercialization process; provision of incubator support and facilities; assistance with SBIR proposal preparation; partnering with local industry in product development; and serving as a non-biased facilitator in local economic development. The university's role while different and distinct for each, is complimentary to both and not competitive. Specifics of partnerships with universities- and with other entities- are provided below.

**Partnerships Between Universities and Industry.**— Six partnerships formed between universities and local industry. In three of these (Louisiana, Nebraska, and Portland, Oregon) the grantees noted that their EPSCoT work represented the first time that industry had partnered with a university, and that the EPSCoT grant served to bridge the gap that historically existed between the two sectors. As a result of this partnering opportunity, the partners realized that they shared many common goals and could achieve them more expeditiously if they worked cooperatively. A good example of the success that can result when universities partner with industries is in Oregon's Seed as a Team Sport (SITS) program. Oregon University staff collaborated with a private Portland-based firm, working

---

<sup>5</sup>For example, EPSCoR grants largely support university activities that are heavily oriented to basic research.

with regional partners to run workshops that created angel networks in rural communities. Previous to this effort, no such networks existed.

**Partnerships Between Universities and Community Colleges.**— There were three partnerships that formed between universities and community colleges or vocational educational institutions. Similar to the partnerships with local industry, grantees in these initiatives noted that collaborations between the two had not been previously explored. As one example, the University of Nebraska indicated that it believes it successfully overcame the stigma attached with partnering with a community college.

**Partnerships across Universities.**— Four EPSCoT projects recruited partners from various universities in their States. Overall, these partnerships were very effective in accomplishing their tasks and led to positive outcomes: 1) the partners networked with faculty from the neighboring universities and made connections that otherwise would not have been made; and 2) the partners initiated additional joint efforts beyond the scope of the grant. Working together also reduced redundancies in work. In one project, for instance, two separate universities did not realize until after their EPSCoT partnership began, that they had both been pursuing some of the same activities independently.

As the partners came from the same professional environment, facilitating communication and understanding of the issues seemed easier. All of the partners experienced the constraints that accompany operating within a university environment; however, the partners also shared the benefits of working in this environment. The team members noted that they had never before worked together in this capacity and it led to two main positive outcomes:

**Partnerships With State Science and Technology or Economic Development Office.**— The Louisiana EPSCoT project was led by the Louisiana Board of Regents and supported through a partnership with the Louisiana Department of Economic Development (LDED). The State's creation of *Vision 2020*, an economic plan expected to see Louisiana through the next 20 years, was aligned closely to the goals of the project. The State is now working with the grantees to establish technology as a base for economic development; these efforts are expected to continue beyond the grant period. Because of the working relationship that developed out of this work, the grantee was able to successfully implement its initiatives.

The second project that partnered with the State, the Oregon Emerging Business Initiative, had representatives from: the Economic Development Joint Boards Working Group; the Oregon Economic and Community Development Department; the Oregon Department of Justice; and the Oregon State Treasurer's office. The grantees sought to include members of government, universities, and business, and stressed the effectiveness of the partnerships that formed. The linking of these three sectors benefitted each of them and changed the legislature's perception and attitude toward higher education, now seeing it as an "investment rather than a cost center." The partners who represented the State of Oregon worked in collaboration with the other partners to explore and reduce the gap that exists between higher education and technology.

**Partnerships across States.**— TEAM DelTA: Technology-based Economic Development in the Mississippi River Delta project, formed partnerships across three States: Arkansas, Louisiana, and Mississippi. The pre-existence of the partnership as the Delta Tech Alliance contributed to the success of this project. Although previously formed, the Alliance lacked the financial support necessary to accomplish its goals for the Delta region; the EPSCoT funds allowed the partners to pursue these goals.



This tri-state partnership proved to be essential, as the Mississippi river delta is shared by all three States. Partners recognized the importance of maintaining these relationships beyond the grant period in order to achieve the long-term goal of improving technology in the Mississippi River Delta. State legislatures typically deny responsibility for the low economic growth in the Delta since two-thirds of it lies outside their jurisdiction. The grantees believe that lasting change can be made in the Delta region, and noted that the Delta region now has a “seat at the table” when technology issues are discussed.

**Exhibit 2-3**

**TYPES OF PARTNERSHIPS**

<b>Type</b>	<b>Project</b>	<b>University and Industry</b>	<b>University and Community College or Vocational Educational Institution</b>	<b>Across Universities/Colleges</b>	<b>State Science and Technology/Economic Development Office</b>	<b>Across States</b>
<b>Providing Comprehensive Planning Services</b>	Cameron University EPSCoT Planning Grant Request	T	T			
	Development of an Entertainment Technologies Industry in Southern Nevada	T	T			
<b>Assisting Small Businesses</b>	Center for Enterprise Development and Commercialization Support	T				
	Maine EPSCoT Technology Commercialization Network	T				
	Oregon Emerging Business Initiative	T		T	T	
	1999 South Carolina EPSCoT			T		
<b>Providing Services to Technology Firms</b>	Accelerating Commercialization of University-based Technologies in Louisiana			T	T	
	North Dakota EPSCoT: Enhancing Technology North Dakota			T		
	RF Wireless Testing and Training Cluster in Eastern Nebraska	T	T			
<b>Participating in a Multi-State Collaboration</b>	TEAM DeITA					T

### ***Relationship with the State***

For most of the EPSCoT projects, the relationship with the State became stronger as a result of the project's initiatives. Each of the projects realized the importance of cultivating a relationship with key legislators and other State officials, especially to gain favorable legislation and secure additional funding (Exhibit 2-4).

The State proved to be a powerful ally in many situations. For example, if a partnering State official or agency convened a meeting or proposed an activity, it tended to receive attention and recognition. The State, through its various communication mechanisms, also had the ability to generate awareness about the project's efforts as a whole. Projects housed at the State level generally pursued goals that were aligned with the State's previously determined science and technology goals or economic development goals. The State also provided a measure of respectability to the project. However, grantees noted potential difficulties may be associated with housing a project directly in a governor's office. For example, should the grant period coincide with an election year, the staff may be focused on the re-election campaign and may have little time to dedicate other projects and, in the event that a different political party is elected, the project may not have the same level of support as economic goals and vision change.

Some patterns emerged when examining the relationships between state government and specific types of projects.

#### ***Results for Two Projects Providing Comprehensive Planning Services*** (Oklahoma and Nevada)

- States did not actively participate in any of the grant activities, but was contacted and briefed on them;
- States supported project efforts conceptually, but not fiscally.

#### ***Results for Four Projects Assisting Small Businesses*** (Maine (2), Oregon, South Carolina)

- In Maine, the State has technology goals which are aligned with the efforts of the projects, as evidenced by its recent support to create the Maine Technology Institute combined with the recent authorization of the development of seven technology centers throughout the State
- State legislators visited the Center for Environmental Enterprise (CEE) incubator, an effort pursued with grant money. The focus of the trip was to learn about ways that technology industries are growing in Maine. The State's representatives are now advocates of the incubator concept and the State senators are aware of the project's accomplishments and have come to appreciate the potential advantages of these types of projects;
- The Oregon project reported that the State legislature is currently considering four technology-related bills this session, all of which are expected to pass this summer; and
- The South Carolina project aligned its goals closely with those the State set in the late 1990s. It currently has the attention of the legislature, partly as a result of EPSCoR's previously existing relationship.

***Results of Three Projects Providing Services to Technology Firms***  
( Louisiana, North Dakota, Nebraska)

- The Louisiana legislature demonstrated the most dedication, likely because it was a partner in the project. So far the legislature has passed two important bills related to technology and it is expected to continue to play a critical role in technology-based economic development.
- In North Dakota the State's role was minimal, it primarily involved supporting the activities of the grant conceptually, but not fiscally; and
- The Nebraska legislature showed interest, authorizing additional expenditures for the creation of the Nebraska Center for Electrical Excellence (NCEE). The project received verbal support from a key senator.

***Results of a Multi-State Collaboration***

( Technology-based Economic Development Alliance in the Mississippi River Delta).

- In this project, as in the Nebraska and North Dakota projects, the support of the legislature was more verbal and conceptual than financial. They did note some progress in getting the attention of the legislature, which has traditionally failed due to the economic disparities in this region.

**Exhibit 2-4**

**EPSCoT GRANTEES' RELATIONSHIP WITH THE STATE**

	Baton Rouge, LA	Bangor, ME	Portland, ME	TEAM Delta	Lincoln, NE	Grand Forks, ND	Henderson, NV	Portland, OR	Lawton, OK	Columbia, SC
<i>Was there a previous relationship between the partners and the State?</i>	<u>I</u>							<u>I</u>		<u>I</u>
<i>Was there a direct partnership with a State agency?</i>	<u>I</u>							<u>I</u>		
<i>Did the State have a Science and Technology or Economic Development Plan in place at the start of the EPSCoT grant?</i>	<u>I</u>			<u>I</u>	<u>I</u>			<u>I</u>		<u>I</u>
<i>If not, has the EPSCoT grant spurred any interest in developing either one or both?</i>								<u>I</u>		
<i>Have any legislators been contacted to educate them on the grant activities?</i>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>
<i>Is there ongoing communication between partners and legislators?</i>	<u>I</u>		<u>I</u>	<u>I</u>		<u>I</u>		<u>I</u>	<u>I</u>	<u>I</u>
<i>Has any legislation been initiated that is related to the EPSCoT grant?</i>	<u>I</u>		<u>I</u>	<u>I</u>				<u>I</u>	<u>I</u>	
<i>Has any legislation passed that is related to the EPSCoT grant?</i>	<u>I</u>									
<i>Has there been a shift in the legislature's perception of technology's role in the economy?</i>		<u>I</u>	<u>I</u>		<u>I</u>				<u>I</u>	<u>I</u>
<i>Has the State authorized additional expenditures for technology-based economic development during or after the grant period?</i>	<u>I</u>	<u>I</u>	<u>I</u>	<u>I</u>						<u>I</u>

### **Challenges, Observations, and Lessons Learned**

The projects encountered few initial barriers, but concerns arose as the projects progressed. and some common problems were frequently cited: 1) Overestimation of tasks that could be completed with respect to time and funding allocations; 2) Turnover within OTP proved to be disruptive to the project's efforts and contributed to the lack of feedback grantees received regarding their administrative requirements; 3) Uncertainty with respect to the future sustainability of the project due to the cessation or gap in funding (there was an assumption by some that funding would be available annually, similar to EPSCoR); 4) Partnerships grew too large and diverse in some cases, making communication difficult; and, 5) Existing cultural and community barriers inhibited project efforts.

In the Center for Enterprise Development and Commercialization Support project (ME), the grantees put the funding to immediate use, dispersing funds to a number of areas rather than solely targeting one area for growth. As such, their funds became sparsely divided, leaving them unable to pursue tasks as comprehensively as they would have liked or to pursue other related tasks. Further, they were concerned about the gap or cessation of federal funding for their efforts. They stated that it will be difficult to sustain their efforts over time and felt that a continuous funding stream is critical to their particular type of project, particularly in the early stages.

The Cameron University EPSCoT Planning Grant Request project (OK) had a similar experience. They are now considering alternative ways to obtain funding for the implementation phase of their project so it project "does not get shelved." TEAM DeITA project members also expressed disappointment with the amount of funding they had to work with and said it was insufficient to make a lasting impact on the region.

One of the most frequently cited problems, as mentioned previously, by the grantees was staff turnover within OTP. Grantees stated that the turnover proved disruptive to the project in many respects including: lag time between former and new employee having contact with the grantees; learning curve about nuances associated with the project; and lack of response to requests or review of reports.

Existing cultural and community barriers were mentioned as problematic by four of the projects:

**Maine - The Center for Enterprise Development and Commercialization Support.**—Mentioned an attitude regarding the "scarcity of resources" that exists in Maine which worked against their efforts and it created a sense of distrust in the possibility for success among the local corporations. The grantees currently are seeking to build alliances to strengthen the industry as a whole. There also is belief that if projects are encouraged to compete against one another in such a small and well-connected State as Maine, irreparable harm may be done to business relationships, adversely affecting the future growth of technology in the entire State;

**North Dakota- Enhancing Technology North Dakota.**—Noted that North Dakota appears culturally hesitant to "try new things." The typical attitude is not to rush into things and, since most technology-oriented businesses move swiftly, opportunities are often missed. They link this to the State's exportation of talent; graduating students see no reason to stay in the North Dakota since better job opportunities exist elsewhere. The grantee acknowledged this shortcoming and are attempting to help alleviate this cultural barrier knowing that it will help in their efforts to bring more technology to North Dakota.

**Cameron University EPSCoT Planning Grant Request.**— Confronted negative community perceptions about the role of technology in their State’s overall economic future. The grantee’s ballot initiative to support a growth in infrastructure failed due to lack of awareness about technology-based economic growth and a resistance to change.

**Oregon Emerging Business Initiative.**-- State culture requires that there be an unlimited level of inclusion in efforts such as this one. As such, their partnerships grew quite large and were, at times, challenging to maintain. Friction primarily resulted from geographic differences. It was difficult to bridge the concerns of the rural entities with those of the urban ones.

In addition, some of the projects mentioned that the partnerships that formed were not as effective as hoped. The most dominant problem appeared to be a lack of coordination and communication between partners, combined with a lack of clear and defined expectations and assignments. Guidance about partnership structure, organization, membership, and communication would have assisted efforts. Firm requirements regarding the frequency of meetings among partners and the accomplishments expected of those partnerships would have been helpful.

For example, the Oregon Emerging Business Initiative reported that the large number of partners posed a challenge to maintain in such a short period of time. The core partners had to be very dogmatic and almost “dictatorial” at times in part due to the conflicts that arose within the partnerships, but also because of the large number of team members. The Development of an Entertainment Technologies Industry in Southern Nevada project would also have benefitted from more supervision and structure regarding its partnerships. The grantee reported that the partners thus far have worked independently from one another because of the diverse and unrelated nature of their efforts. The partners have relied upon the Project Manager to coordinate their activities, communicate among each other, and be a resource.

## CHAPTER 3 - RECOMMENDATIONS

While the lessons learned varied project to project, some consistencies emerged from the study regarding areas for improvement in OTP's operation of the program. In general, those areas for improvement, as noted by the contractor, call for an increase in OTP hands-on direction and guidance throughout the life-cycle of the funded projects:

**Partnerships:** Projects that partnered with the State reported that the State provided increased credibility and awareness of project activities. The State was able to make things happen." Partnerships with universities and industry successfully led to the facilitation of technology-based economic development.

***OTP should provide more information on partnering options in addition to guidance on communicating and coordinating effectively with partners.***

**EPSCoT Funding:** The ending of EPSCoT's funding proved disruptive to some of the projects that failed to secure funding beyond the EPSCoT grant period. Many of the grantees believed funding would be awarded and available on an annual basis.

***OTP staff should reinforce the idea at the beginning of the grant period that additional funding may not be forthcoming from their agency.***

**Department of Commerce Guidance:** *OTP staff should provide more direction and guidance throughout the lifecycle of the grant, as many grantees overestimated what could be completed with respect to the given time and funding allocations. In addition, consistent and continuous feedback should be given on the quarterly report submission so if problems arise, they can be resolved quickly.*

**Outcome Evaluation:** EPSCoT funding was intended to be for one, short-term project. Due to the types of projects funded, long-term outcomes are difficult to assess. Evaluation of the impact of commercialization projects is premature as projects are at an early juncture in the commercialization process (commercialization is a multi-phase, multi-year process).

***Alternatively, OTP should consider in making grants and assessing the impact of the projects, only the immediate results that are more likely to occur rather than a set of hoped for impacts in the long term or any change in general economic performance.***

This analysis examined the short term and potential impact of EPSCoT funding on ten separate projects. One important lesson learned is that the impact of the program is not necessarily immediate in terms of job creation or business formation. Moreover, the relatively small amounts of grant monies appear unlikely to impact the unequal distribution of R&D expenditures across the states or the prevailing economic conditions by which states qualify for the program. Rather, the impact of the program appears to be most tangible in how it was used locally to improve conditions to support technology commercialization and to foster a business climate conducive to technology development, deployment, and diffusion.





## **APPENDIXES**



# Appendix A

## Sec. 3704. - Commerce and technological innovation

### (f) Experimental Program to Stimulate Competitive Technology

#### (1) In general

The Secretary, acting through the Under Secretary, shall establish for fiscal year 1999 a program to be known as the Experimental Program to Stimulate Competitive Technology (referred to in this subsection as the "program"). The purpose of the program shall be to strengthen the technological competitiveness of those States that have historically received less Federal research and development funds than those received by a majority of the States.

#### (2) Arrangements

In carrying out the program, the Secretary, acting through the Under Secretary, shall

(A) enter into such arrangements as may be necessary to provide for the coordination of the program through the State committees established under the Experimental Program to Stimulate Competitive Research of the National Science Foundation; and

#### (B) cooperate with

(i) any State science and technology council established under the program under subparagraph (A); and

(ii) representatives of small business firms and other appropriate technology-based businesses.

#### (3) Grants and cooperative agreements

In carrying out the program, the Secretary, acting through the Under Secretary, may make grants or enter into cooperative agreements to provide for

(A) technology research and development;

(B) technology transfer from university research;

(C) technology deployment and diffusion; and

(D) the strengthening of technological capabilities through consortia comprised of

(i) technology-based small business firms;

(ii) industries and emerging companies;

(iii) universities; and

(iv) State and local development agencies and entities.

#### (4) Requirements for making awards

#### (A) In general

In making awards under this subsection, the Secretary, acting through the Under Secretary, shall ensure that the awards are awarded on a competitive basis that includes a review of the merits of the activities that are the subject of the award.

#### (B) Matching requirement

The non-Federal share of the activities (other than planning activities) carried out under an award under this subsection shall be not less than 25 percent of the cost of those activities.

**(5) Criteria for States**

The Secretary, acting through the Under Secretary, shall establish criteria for achievement by each State that participates in the program. Upon the achievement of all such criteria, a State shall cease to be eligible to participate in the program.

**(6) Coordination**

To the extent practicable, in carrying out this subsection, the Secretary, acting through the Under Secretary, shall coordinate the program with other programs of the Department of Commerce.

**(7) Report**

**(A) In general**

Not later than 90 days after October 30, 1998, the Under Secretary shall prepare and submit a report that meets the requirements of this paragraph to the Secretary. Upon receipt of the report, the Secretary shall transmit a copy of the report to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science of the House of Representatives.

**(B) Requirements for report**

The report prepared under this paragraph shall contain with respect to the program -

- (i)** a description of the structure and procedures of the program;
- (ii)** a management plan for the program;
- (iii)** a description of the merit-based review process to be used in the program;
- (iv)** milestones for the evaluation of activities to be assisted under the program in fiscal year 1999;
- (v)** an assessment of the eligibility of each State that participates in the Experimental Program to Stimulate Competitive Research of the National Science Foundation to participate in the program under this subsection; and
- (vi)** the evaluation criteria with respect to which the overall management and effectiveness of the program will be evaluated.

## **Appendix B**

(Appendix B contains the 10 case studies summarized above and is available upon request. The document is about 185 pages.)